

## **Management Accounting Level 3**



International  
Qualifications from EDI

### **Model Answers** Series 2 2012 (3024)

# Management Accounting Level 3

## Series 2 2012

### How to use this booklet

Model Answers have been developed by EDI to offer additional information and guidance to Centres, teachers and candidates as they prepare for LCCI International Qualifications. The contents of this booklet are divided into 3 elements:

- (1) Questions – reproduced from the printed examination paper
- (2) Model Answers – summary of the main points that the Chief Examiner expected to see in the answers to each question in the examination paper, plus a fully worked example or sample answer (where applicable)
- (3) Helpful Hints – where appropriate, additional guidance relating to individual questions or to examination technique

Teachers and candidates should find this booklet an invaluable teaching tool and an aid to success.

EDI provides Model Answers to help candidates gain a general understanding of the standard required. The general standard of model answers is one that would achieve a Distinction grade. EDI accepts that candidates may offer other answers that could be equally valid.

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## QUESTION 1

Alpha Limited has the following data for the maintenance of its plant for the past four operating periods:

	Period 3	Period 4	Period 5	Period 6
Plant operation (hours)	8,500	7,750	10,250	9,800
Total plant maintenance costs	£131,560	£127,050	£163,680	£160,440
Average price-level index	115	121	132	140

### REQUIRED

- (a) Use the high-low method to:
- (i) analyse the total plant maintenance costs into a variable cost per hour and total fixed costs per period at the Period 3 average price-level index. (5 marks)
  - (ii) estimate the total plant maintenance costs in Period 7, if the plant is operated for 10,500 hours and the average price-level index is 148. (3 marks)

Beta Limited manufactures and sells three products. The budgeted data for the next period are:

	Product X	Product Y	Product Z
Sales volume (units)	10,000	6,000	4,000
Selling price per unit	£40.00	£30.00	£25.00
Variable costs per unit	£31.60	£19.50	£15.00

Fixed costs for the period are budgeted to be £83,160.

### REQUIRED

- (b) Calculate the contribution/sales ratios for **each** of the three products. (3 marks)
- (c) Based upon the above sales mix (units), calculate the:
- (i) overall contribution/sales ratio (to one decimal place of %) (2 marks)
  - (ii) break-even point (sales revenue) (2 marks)
- (d) Calculate the break-even point (sales revenue) if budgeted fixed costs increase to £94,300 in the period, and the sales mix is revised as follows:
- Product X 30% of total sales revenue
  - Product Y 30% of total sales revenue
  - Product Z 40% of total sales revenue

(5 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 1**  
**Syllabus Topic 1: Short-term cost behaviour (1.3) & (1.5)**

(a) (i)

**Calculation of variable cost per hour and total fixed costs per period at price-level index = 115**

	Hours	Total costs £	Index adjustment	£		
High level	10,250	163,680	× 115/132	142,600	1	
Low level	<u>7,750</u>	127,050	× 115/121	<u>120,750</u>	1	
	<u>2,500</u>			<u>21,850</u>		
<b>Variable cost per hour</b>	=	$\frac{£21,850}{2,500}$	=	£8.74 per hour	1	
<b>Total fixed costs per period</b>	=	$£142,600 - (10,250 \times £8.74)$		=	£53,015	2 of
<b>Alternative method</b>		$£120,750 - (7,750 \times £8.74)$		=	£53,015	(5 marks)

(ii)

**Estimated total plant maintenance costs for 10,500 hours at price-level index = 148**

<b>Total maintenance costs at price-level index = 115</b>	£	
Variable maintenance costs (10,500 hours × £8.74)	91,770	½ of
<b>Add: Fixed costs</b>	<u>53,015</u>	½
Total operating costs	<u>144,785</u>	
<b>Adjusted maintenance costs</b>	=	$£144,785 \times 148 / 115 = £186,332$

(3 marks)

**Syllabus Topic 2: Cost/volume/profit (CVP) analysis (2.1) & (2.2)**

(b) Contribution/sales (C/S) ratio by product:

Product X	$(£8.40 \div £40.00) \times 100\%$	=	21%	1
Product Y	$(£10.50 \div £30.00) \times 100\%$	=	35%	1
Product Z	$(£10.00 \div £25.00) \times 100\%$	=	40%	1

(3 marks)

**MODEL ANSWER TO QUESTION 1 CONTINUED**

(c) (i)

**Overall contribution/sales ratio:**

<b>Contribution:</b>			<b>£</b>
Product X	(10,000 units × £8.40)	=	84,000
Product Y	(6,000 units × £10.50)	=	63,000
Product Z	(4,000 units × £10.00)	=	<u>40,000</u>
			<u>187,000</u>

<b>Sales:</b>			
Product X	(10,000 units × £40.00)	=	400,000
Product Y	(6,000 units × £30.00)	=	180,000
Product Z	(4,000 units × £25.00)	=	<u>100,000</u>
			<u>680,000</u>

Overall contribution/sales ratio =  $(£187,000 \div £680,000) \times 100\% = 27.5\% \text{ or } 0.275$  **2**  
(2 marks)

(ii)

**Break-even point**

Break-even point (sales revenue) =  $\frac{\text{Fixed cost}}{\text{Overall C/S ratio}} = \frac{£83,160}{0.275} = £302,400$  **2**  
(2 marks)

(d) **Revised break-even point**

Revised overall C/S ratio:

Product X	$0.21 \times 0.30$	=	0.063	<b>1</b>
Product Y	$0.35 \times 0.30$	=	0.105	<b>1</b>
Product Z	$0.40 \times 0.40$	=	<u>0.160</u>	<b>1</b>
			<u>0.328</u>	= 32.8%

Revised break-even point (sales revenue) =  $\frac{£94,300}{0.328} = £287,500$  **2**  
(5 marks)

**(Total 20 marks)**

## QUESTION 2

A company manufactures a single product, which is sold for £65 per unit. The company is operating at 75% of its available capacity of 3,200 units in the current period.

The total production costs per period are £275,200, of which 60% are variable costs.

The company has received an enquiry about a one-off order for 500 units at £62.00 per unit.

### REQUIRED

- (a) Advise the company, using appropriate workings, whether it should accept the one-off order.

(6 marks)

Delta Limited manufactures and sells three products which all use the same direct materials and the same type of direct labour. The following details are available:

	<b>Product A</b> <b>£ per unit</b>	<b>Product B</b> <b>£ per unit</b>	<b>Product C</b> <b>£ per unit</b>
Selling price	156	96	140
Direct materials (£18 per kilo)	54	36	45
Direct labour (£10 per hour)	30	15	25
Overhead costs	60	30	50

The overhead costs are estimated to be 40% variable and 60% fixed. The fixed element of overhead costs is charged to products on the basis of the total direct labour hours required to satisfy the demand per period for each product as follows:

Product A 1,500 units  
Product B 3,600 units  
Product C 4,200 units

There is a shortage of direct labour hours and only 18,000 hours are available for production in the coming period.

No stock of finished goods is held.

### REQUIRED

- (b) Prepare a production schedule that will maximise profit for the coming period and calculate the amount of the profit.

(14 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 2**  
**Syllabus Topic 3: Short-term decision-making (3.6) & (3.10)**

- (a) Current capacity utilisation =  $3,200 \times 0.75 = 2,400$  units 1
- Thus, there is a spare capacity of 800 units
- Variable production cost per unit =  $[(£275,200 \times 60\%) \div 2,400] = £68.80$  per unit 2
- Contribution if one-off order is accepted:
- |                                       |                   |   |
|---------------------------------------|-------------------|---|
|                                       | <b>£ per unit</b> |   |
| One-off order price                   | 62.00             |   |
| <b>Less:</b> Variable production cost | (68.80)           |   |
| Lost contribution                     | ( 6.80)           | 1 |
- Total contribution lost =  $500 \text{ units} \times £6.80 = £3,400$  1
- The company should not accept the one-off order because it would reduce its profits by £3,400. 1
- (6 marks)

(b)

	Product A £ per unit	Product B £ per unit	Product C £ per unit	
Selling price	<u>156</u>	<u>96</u>	<u>140</u>	
Deduct variable costs				
Direct material	54	36	45	
Direct labour	30	15	25	
Variable overheads	<u>24</u>	<u>12</u>	<u>20</u>	[W1] 1½
	<u>108</u>	<u>63</u>	<u>90</u>	
	<b>£</b>	<b>£</b>	<b>£</b>	
<b>Contribution per unit (£)</b>	<u>48</u> ½	<u>33</u> ½	<u>50</u> ½	
Direct labour hours/unit	3	1.5	2.5	[W2] 1½
	<b>£</b>	<b>£</b>	<b>£</b>	
Contribution/labour hour (£)	16 ½	22 ½	20 ½	
Ranking	3 <sup>rd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	

**Production schedule and the resulting net profit**

	Units	Labour hours	Total contribution £
Product B	$3,600 \frac{1}{2} \times 1.5$ hours	$= 5,400 \frac{1}{2}$	$\times £22 = 118,800 \frac{1}{2}$
Product C	$4,200 \frac{1}{2} \times 2.5$ hours	$= 10,500 \frac{1}{2}$	$\times £20 = 210,000 \frac{1}{2}$
Product A (2,100 ÷ 3)	$700 \mathbf{1} \times 3$ hours	$= \underline{2,100 \frac{1}{2}}$	$\times £16 = \underline{33,600 \frac{1}{2}}$
		<u>18,000</u>	<u>362,400</u>
		<b>Less Fixed costs</b>	<u>244,800</u> [W3] 3
		<b>Net profit</b>	<u>117,600</u>

## MODEL ANSWER TO QUESTION 2 CONTINUED

### Workings

W1 – Variable overhead cost per unit:

A	$£60 \times 0.40 = £24.00$	$\frac{1}{2}$
B	$£30 \times 0.40 = £12.00$	$\frac{1}{2}$ [1½]
C	$£50 \times 0.40 = £20.00$	$\frac{1}{2}$

W2 – Direct labour hours per unit

<u>Direct labour cost per unit</u>	A	$\frac{£30}{£10} = 3$	$\frac{1}{2}$	B	$\frac{£15}{£10} = 1.5$	$\frac{1}{2}$	C	$\frac{£25}{£10} = 2.5$	$\frac{1}{2}$	[1½]
Direct labour rate per hour		£10			£10			£10		

W3 – Total fixed costs =  $(1,500 \times £60) + (3,600 \times £30) + (4,200 \times £50) = £408,000 \times 0.6$   
= £244,800 [3]

### Alternative calculation

$$(1,500 \times 3) + (3,600 \times 1.5) + (4,200 \times 2.5) = 20,400 \text{ hours} \times £12.00^* = £244,800 \text{ [3]}$$

\*Fixed overhead absorption rate (FOAR)

Product A	$[(£60 \times 0.6) \div 3]$	=	£12.00 per hour
Product B	$[(£30 \times 0.6) \div 1.5]$	=	£12.00 per hour
Product C	$[(£50 \times 0.6) \div 2.5]$	=	£12.00 per hour

**(Total 20 marks)**



### QUESTION 3

The following information is extracted from a retail company's financial records for the last year:

	Start of year £000	End of year £000
Trade debtors	184	136
Stock	138	174
Trade creditors	130	112

Additional information:

- (1) cost of sales during the year was £1,260,000 and a gross profit of 30% was earned on sales
- (2) 40% of all sales were for cash and the remainder were credit sales.

Assume 1 year = 365 days

#### REQUIRED

- Calculate the company's working capital cycle (rounded to whole days), using the average of opening and closing balances for trade debtors, stock and trade creditors. (8 marks)
- Define working capital and explain why its management is important in the day-to-day operation of a business. (6 marks)

A company's budgeted profit statement, based on the sale of 12,000 units of its single product for a period is given below:

	£000	£000
Sales		450
Cost of sales:		
Direct materials	180	
Direct labour	120	
Variable overhead	50	
Fixed overhead	<u>90</u>	<u>440</u>
Budgeted net profit		<u>10</u>

The company is considering changing the specification of direct materials in order to reduce their cost per unit by 15%. In addition, a modification of the production process is expected to reduce the direct labour cost per unit by 10%. The selling price per unit will be reduced by 5% because of the reduction in product quality and the sales volume would decrease by 8%.

#### REQUIRED

- Prepare a revised budgeted profit statement for the period. (6 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 3**

**Syllabus Topic 5: Cash and working capital management (5.4) & (5.10)**

**Syllabus Topic 4: Budgetary planning and control (4.5)**

(a) **Working capital cycle**

		<b>£000</b>	
Average stock	=	$(138 + 174) \div 2$	156 <span style="color: red;">1/2</span>
Sales value	=	$1,260 \div 0.70$	1,800 <span style="color: red;">1/2</span>
Credit sales	=	$1,800 \times 60\%$	1,080 <span style="color: red;">1/2</span>
Average debtors	=	$(184 + 136) \div 2$	160 <span style="color: red;">1/2</span>
Purchases	=	Cost of sales + closing stock – opening stock	
	=	$1,260 + 174 - 138$	1,296 <span style="color: red;">1 1/2</span>
Average creditors	=	$(130 + 112) \div 2$	121 <span style="color: red;">1/2</span>
Stockholding period	=	$(£156 \div £1,260) \times 365$	= 45 days <span style="color: red;">1</span>
<b>Add:</b> Debtors collection period	=	$(£160 \div £1,080) \times 365$	= <u>54</u> days <span style="color: red;">1</span>
			99
<b>Less:</b> Creditors payment period	=	$(£121 \div £1,296) \times 365$	= <u>34</u> days <span style="color: red;">1</span>
<b>Working capital cycle</b>			<u>65</u> days <span style="color: red;">1</span>

(8 marks)

(b) Working capital is the excess of current assets over current liabilities; it is the amount of additional funds needed by a business organisation to meet the requirements of its operations. An investment in plant and equipment often requires additional working capital to pay for extra wages and other expenses, stock of raw materials and supplies required for operations of the investment. 2

Working capital management, therefore, involves the management of stock, debtors, creditors and cash resources with the aim of minimising the risk of insolvency and at the same time maximising the return on assets. Efficient working capital management will ensure that a company has sufficient cash to meet its day-to-day operational needs. 2

This may involve minimising the amount of cash tied up in stocks, collecting money owed by debtors quickly, delaying payments to creditors – without putting future supplies in jeopardy – and reducing the level of overdraft or increasing bank balances. 2

(6 marks)

(c) **Revised budgeted profit statement**

		<b>£</b>	<b>£</b>	
Sales	$(£450,000 \times 0.95 \times 0.92)$		393,300	1 1/2
Cost of sales:				
Direct materials	$(£180,000 \times 0.85 \times 0.92)$	140,760	1 1/2	
Direct labour	$(£120,000 \times 0.90 \times 0.92)$	99,360	1 1/2	
Variable overhead	$(£50,000 \times 0.92)$	46,000	1	
Fixed overhead		<u>90,000</u>	1/2	
<b>Revised budgeted net profit</b>			<u>376,120</u>	
			<u>17,180</u>	

(6 marks)

**(Total 20 marks)**

#### QUESTION 4

A company had budgeted to manufacture and sell 2,500 units of its single product for a period. The budgeted and standard cost data per unit are as follows:

Direct material	4 kilos @ £21.20 per kilo
Direct labour	1.5 hours @ £16.00 per hour

Fixed production overhead is absorbed at 80% of direct labour cost.

A mark up of 25% is applied to the standard production cost per unit to determine the standard selling price.

Actual results for the period were as follows:

Production and sales	2,850 units
Sales revenue	£435,480
Direct materials used	10,540 kilos @ £11.50 per kilo
Direct labour	4,760 hours @ £17.75 per hour
Fixed production overhead	£51,120

#### REQUIRED

- (a) Calculate the standard selling price of the product. (3 marks)
- (b) Calculate the following variances for the period:
- (i) sales price (2 marks)
  - (ii) sales volume profit (2 marks)
  - (iii) direct material usage (2 marks)
  - (iv) direct labour rate (2 marks)
  - (v) fixed production overhead expenditure (2 marks)
  - (vi) fixed production overhead volume efficiency (2 marks)
  - (vii) fixed production overhead volume capacity. (2 marks)
- (c) Using variances calculated in part (b) above as appropriate, provide **two** illustrations of possible links between variances. (3 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 4**

**Syllabus Topic 6: Standard costing and variances (6.2), (6.3), (6.5), (6.6) & (6.11)**

(a) Standard selling price

	<b>£ per unit</b>	
Direct material (4 kilos × £21.20 per kilo)	84.80	½
Direct labour (1.5 hours × £16.00 per hour)	24.00	½
Fixed production overhead (1.5 hours × 80% × £16.00)	19.20	1
Standard cost	128.00	
<b>Add: Gross profit (£128 × 25%)</b>	<b>32.00</b>	<b>1</b>
<b>Standard selling price</b>	<b>160.00</b>	

(3 marks)

- (b) (i) Sales price variance  
 (Standard price × Actual units) – (Actual price × Actual units)  
 (£160.00 × 2,850 units) – £435,480  
 £456,000 – £435,480 = **£20,520 Adverse** 2  
 (2 marks)
- (ii) Sales volume profit variance  
 (Standard profit × Actual units) – (Standard profit × Budgeted units)  
 (£32.00 × 2,850 units) – (£32.00 × 2,500 units)  
 £91,200 – £80,000 = **£11,200 Favourable** 2  
 (2 marks)
- (iii) Direct material usage variance  
 (Standard price × Standard usage) – (Standard price × Actual usage)  
 [£21.20 × (2,850 × 4 kilos)] – (£21.20 × 10,540 kilos)  
 £241,680 – £223,448 = **£18,232 Favourable** 2  
 (2 marks)
- (iv) Direct labour rate variance  
 (Standard rate × Actual hours) – (Actual rate × Actual hours)  
 (£16.00 × 4,760 hours) – (£17.75 × 4,760)  
 £76,160 – £84,490 = **£8,330 Adverse** 2  
 (2 marks)
- (v) Fixed production overhead expenditure variance  
 Budgeted fixed overheads – Actual fixed overheads  
 [£12.80 × (1.5 hours × 2,500 units)] – £51,120  
 £48,000 – £51,120 = **£3,120 Adverse** 2  
 (2 marks)
- (vi) Fixed production overhead volume efficiency variance  
 (Standard rate × Standard hours) – (Standard rate × Actual hours)  
 [£12.80 (1.5 hours × 2,850 units)] – (£12.80 × 4,760 hours)  
 £54,720 – £60,928 = **£6,208 Adverse** 2  
 (2 marks)
- (vii) Fixed production overhead volume capacity variance  
 (Standard rate × Budgeted hours) – (Standard rate × Actual hours)  
 [£12.80 (1.5 hours × 2,500 units)] – (£12.80 × 4,760 hours)  
 £48,000 – £60,928 = **£12,928 Favourable** 2  
 (2 marks)

(c) Reasons for variances:

- Favourable sales volume profit variance may have resulted from the lower than standard selling price charged. 1½
  - Favourable direct material usage variance may have resulted from more highly skilled workers employed (adverse direct labour rate variance). 1½
- (3 marks)

**(Total 20 marks)**

## QUESTION 5

A company is considering an investment project requiring an expenditure of £1,450,000 on new equipment. The equipment is expected to have a useful life of five years, with a residual value of £150,000, and would be depreciated on a straight-line basis.

Estimates of cost savings (net of depreciation of the new equipment) arising from the investment are as follows:

Year	£000
1	80
2	100
3 to 5	180 per annum

The company's cost of capital is 15% per annum.

Discount factors:	Year	5%	10%	15%	20%
	1	0.952	0.909	0.870	0.833
	2	0.907	0.826	0.756	0.694
	3	0.864	0.751	0.658	0.579
	4	0.823	0.683	0.572	0.482
	5	0.784	0.621	0.497	0.402

### REQUIRED

- (a) In relation to the investment in new equipment, calculate the:
- (i) accounting rate of return (using the average investment value) (3 marks)
  - (ii) net present value (7 marks)
  - (iii) internal rate of return. (3 marks)
- (b) Advise the company on whether the investment in the new equipment is worthwhile, on the basis the net present value and internal rate of return calculated in part (a). (3 marks)
- (c) State the limitations of the accounting rate of return as a method of evaluating investment projects. (4 marks)

**(Total 20 marks)**

**MODEL ANSWER TO QUESTION 5**

**Syllabus Topic 7: Long-term decision-making (7.3), (7.4), (7.7), (7.8) & (7.15)**

(a) (i) **Calculation of accounting rate of return (ARR)**

Average accounting profit =  $\frac{[80 + 100 + (3 \times 180)]}{5 \text{ years}}$  = £144,000 1½

Average investment value =  $\frac{£1,450 + 150}{2}$  = £800,000 1

**ARR** =  $\frac{£144,000}{£800,000} \times 100\%$  = 18% ½

(3 marks)

(ii) **Calculation of net present value (NPV)**

Accounting profit + depreciation = cash flows (£000)

Year 1	80 + 260*	=	£340	½
Year 2	100 + 260*	=	£360	½
Years 3 to 5	180 + 260*	=	£440	1

\* Annual depreciation =  $(1,450 - 150) \div 5 \text{ years}$  = £260,000 1

Year	Net cash flow £000	Disc. Factor @ 15%	Present values £000	
0	(1,450)	1.000	(1,450.00)	½
1	340	0.870	295.80	½
2	360	0.756	272.16	½
3 to 5	440	1.727	759.88	1½
5	150	0.497	74.55	1
			NPV = ( 47.61)	

(7 marks)

(iii) **Calculation of internal rate of return (IRR)**

Year	Net cash flow £000	Disc. Factor @ 10%	Present values £000	
0	(1,450)	1.000	(1,450.00)	
1	340	0.909	309.06	
2	360	0.826	297.36	
3 to 5	440	2.055	904.20	
5	150	0.621	93.15	
			NPV = 153.77	1

**IRR** = 10% + {5% × [153.77 ÷ (153.77 + 47.61)]} = 13.8% 2

(3 marks)

(b) The investment in new equipment should not be undertaken by the company since it will **generate a negative NPV** and **earn an IRR of 13.8%** which is **lower than the cost of capital of 15%**. 3

(3 marks)

**MODEL ANSWER TO QUESTION 5 CONTINUED**

(c) **Limitations of the accounting rate of return method include the following:**

No agreed method for calculating the denominator used in the formula **1**

Time value of money is not taken into account **1**

Use of different accounting policies may distort profit figures **1**

Uncertainty and risk are not taken into account. **1**

(4 marks)

**(Total 20 marks)**

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